scible fluids was followed by their rapid development, and they appeared in specimens of pure rain water.

Although these observations may not appear to encourage the hope of success in discovering the presence of atmospheric particles connected with the origin of disease, it must not be forgotten that they only refer to bodies distinguishable from one another *whilst in the air*, the possibility remaining that many of the finer molecules present in it are really of different natures, and may yet be distinguished from one another by means of their actions or developments. Many interesting questions are suggested in connection with the fact of the presence of such considerable numbers of living cells in the air. What becomes of them when drawn into the respiratory cavities of animals? Is their vitality destroyed, and, if so, how are they got rid of? Are they ever capable of undergoing any development within the organism, and do they then exert any prejudicial influence on the recipient? These and similar questions can only be answered by means of patient and extended experiment, but even such imperfect and superficial observations as the present will, I trust, serve a useful purpose in clearing away a few of the preliminary obstacles from the path of investigation.

NOTES

A SPECIAL General Meeting of the Linnean Society is to be held on Thursday, March 5, at 8 P.M., "to consider alterations in the Bye-laws of the Society;" when it is expected a full explanation will be given of the reasons which induced the Council to make the alterations recently adopted by the Society, which met with such violent opposition from a small section of the Fellows. It is understood that Mr. Bentham, who has occupied the chair of the Linnean Society for the past eleven years, will not offer himself for re-election at the ensuing anniversary. The custom of the Society requires that the next president shall be a Zoologist, but students of both branches of Biology will be glad to learn that Prof. Allman has allowed himself to be nominated. Few naturalists would bring to the office a wider, and none a more sympathetic knowledge.

MR. HIND writes to the *Times* that he has received from Prof. Winnecke, Director of the Observatory at Strasburg, the following position of a comet discovered by him in the Constellation Vulpecula on the morning of Saturday last:—February 20, at $17^{\mathrm{h}}\ 16^{\mathrm{m}}\ 40^{\mathrm{s}}$ mean time—right ascension, $20^{\mathrm{h}}\ 35^{\mathrm{m}}\ 34{\cdot}2^{\mathrm{s}}$; north declination, 26 deg. $0^{\mathrm{m}}\ 46^{\mathrm{s}}$. The diurnal motion in right ascension is 9^{m} increasing, and in declination 1 deg. 30^{m} towards the south.

PROF. ASA GRAY has been appointed to fill the Chair in the Board of Regents of the Smithsonian Institution, previously occupied by the late Prof. Agassiz.

THE Rev. Dr. Thomas William Jex-Blake, Principal of Cheltenham College, has been elected Head-Master of Rugby School, in succession to Dr. Hayman.

A BARONETCY has been conferred upon Dr. George Burrows, F.R.S., President of the Royal College of Physicians.

WE would direct the attention of Palæontologists and others who are specially interested in the Cephalopoda, to a paper by M. Munier-Chalmas, in the *Comptes Rendus* for Dec. 29, 1873, which is translated in the current number of the *Annals and Magazine of Natural History*, in which, from a study of their earliest stages, the generally accepted systematic position of the Ammonitites and Goniatites is stated to be inaccurate, they being shown to be dibranciate decapoda allied to Spirula, and not tetrabranchiata at all.

THERE are two islands named St. Paul in the ocean: one close to the Equator was visited lately by the *Challenger;* the other, south of the Cape of Good Hope, is to be visited by a French expedition under Capt. Mouchez, for observing the forthcoming transit of Venus, as we stated in our last number. The identity of name has created a singular confusion. The French administration having decided that no naturalist was needed for St. Paul, the *Challenger* having explored the island a few months since, M. Mouchez had some trouble, it is said, to get the decision reversed by the authorities. Both islands, southern and northern, are almost of the same microscopical size and equally barren. They are of volcanic formation, with no trace of vegetable earth, and consequently of vegetation.

A TELEGRAM from Melbourne, dated February 17, states that Colonel Egerton Warburton has reached Perth, in Western Australia, overland from Adelaide, having thus accomplished the object of the exploring expedition on which he left Tennant's Creek, north of Adelaide, in the centre of Australia, about twelve months ago. Colonel Warburton's explorations embrace a portion of the interior of Western Australia hitherto unknown. The distance traversed is over 1,000 miles of longitude, the expedition having been conducted by means of camels, and was fitted out by the munificent liberality of the Hon. Thomas Elder, M.L.C., and Mr. W. W. Hughes. Another expedition under Mr. Gosse, conducted with horses at the expense of the Government of South Australia, has not been so successful. Mr. Gosse, amid many difficulties caused by want of water and the barren nature of the country through which he passed, managed to reach as far as E. long. 129° 59′ in lat. 26° 32′ S., the total distance traversed irrespective of numerous turnings and windings, being not less than 600 miles. His most notable discovery was made in lat. 25° 21′, long. 131° 14′, being a hill consisting of one solid rock (fine conglomerate) or huge natural monolith two miles long, one wide, and 1,100 feet high, with a spring coming from its centre; Mr. Gosse named it "Ayres Rock." Both expeditions are highly creditable to the enterprise of South Australia, which, as our readers know, has succeeded in carrying a line of telegraphy right across the country, from Port Augusta to Port Darwin.

THE enterprise of the Australian Colonies is producing really valuable scientific results, as will be seen from the following telegram, dated Dec. 22, published in the *Brisbane Courier*, from Mr. G. Elphinstone Dalrymple, commander of the Queensland North-east Exploring Expedition:—"The coasts, harbours, inlets, navigable rivers, and creeks have been examined from latitude 18° 15′ to 15° 15′ S. The Bellenden Kerr mountain range has been successfully ascended, and found to be a complete 'razor back' of granite. Palms were found on the summit; but although the botanical discoveries were interesting, they have not borne out all that was anticipated from them; 144 miles of soundings and 371 compass cross bearings have been taken in 19 navigable rivers and creeks of which the North and South Johnstone, the Mulgrave and Russell, drain the Bellenden Kerr range; the Mossman and Daintree drain the Arthur Palmer range inside the Schnapper Island. This range is nearly as lofty as the Bellenden Kerr, and is 25 miles in length. New rivers have been discovered penetrating a jungle-clad country of thoroughly tropical character, covered with a new rich soil suitable for sugar and other tropical cultivation. The extent of this country is roughly estimated at, in the aggregate, half a million acres, thus at once placing Queensland on a par with other favoured tropical countries. Mr. Hill has collected 3,000 botanical specimens, roots, and blocks of timber; 130 shells of five genera and eight species; 42 specimen bags of soils. Mr. Johnstone has collected 30 specimens of interesting birds, insects, and reptiles; and I have obtained 93 geological specimens."

THE French Society of Geography and the Commission delegated by the Syndical Chambers of Commerce of Paris have instituted a "Commission of Commercial Geography." This Commission has for its object—1. To spread in France, either by education or by publications, information relating to commercial geography; 2. To pursue the organisation or development, from an industrial and commercial point of view, of explorations in all quarters of the globe; to take part in researches relative to existing routes or to create new ones; 3. To point out the natural riches and the manufacturing processes which may be utilised by commerce and industry; 4. To inquire into all questions relating not only to the development of French colonisation, but also to the colonial systems of the various civilised nations. The Commission is divided into four sections corresponding to the above, and in the interval between the general meetings these sections hold stated *séances* for discussing questions, their decisions being submitted to the approbation of the Commission.

THE Paris Jardin d'Acclimatisation has just received a flock of six magnificent male ostriches and twelve females presented to it by General Lacroix-Vaubors, who holds a high command in Algeria. All attempts to breed these birds have hitherto proved futile, but a new attempt is to be made under the sun of Provence. The six ostriches will not remain long in Paris, and are to leave soon for Hyeres, where the Acclimatisation Society possesses a large estate.

THE Meteorological Society of France has decided upon holding its next Biennial Exhibition at the Palais de l'Industrie, Champs Elysées: it is to be an International one. The expenses being paid by the Government, no charge will be made for exhibiting. A special circular will be sent to the English Society this year.

THE *New York Tribune* in calling attention to the unauthentic character of a story to the effect that the non-existence of the companion star of Procyon, and of all except two of the satellites of Uranus, had been determined by the new telescope at Washington, announces the first important result obtained from this instrument. The recent observations have resulted in the rediscovery of the two smallest moons of Uranus, which have been not only distinctly seen on several occasions, but have actually been measured by Prof. Newcomb and his assistant, Prof. E. L. Holden. The two larger moons of Uranus, first discovered by Sir Wm. Herschel, are well-known objects, and can be seen under favourable circumstances with any telescope of 12 in. aperture. The two smallest were first discovered by Lassell, about twenty years ago, through the fine instrument attached to his private observatory near Liverpool; but his observations were very unsatisfactory (scarcely, indeed, determining the exact number of moons), and it was not until he renewed his researches at Malta that he obtained any accurate indications. Since that time, and until this re-discovery, no one has seen these satellites, and their detection and accurate observation through the Washington instrument is gratifying evidence of its superior power.

MRS. MARY TREAT publishes in the *American Naturalist* for December 1873 a remarkable contribution to our knowledge of the sensitiveness of the leaves of the sundew, her experiments being chiefly made on the large American species *Drosera filiformis*, the leaves of which capture and kill moths and butterflies two inches across. Her observations are in accordance with those already recorded on English species, that the motion of the glands is excited only by organic substances, or if for a very short time by mineral substances, that the excitement passes off almost immediately. The most astonishing of her observations is, however, that when living flies are pinned at a distance of half an inch from the apex of the leaf, the leaf actually bends towards the insect until the glands reach it and suck its juices. In the *Naturalist* for January is an account of Roth's observations on the irritability of the sundew, made nearly a century ago.

WE have before us the first number of what seems to us likely to be a most useful work—"Insects of the Garden; their habits," &c., by Dr. A. S. Packard. The present number contains 32 pp. with woodcuts and a coloured plate, and is published at 25 cents. It forms part of a work called "Half hours with Insects," to be completed in 12 parts.

AN advance sheet of the forthcoming number of Petermann's *Mittheilungen* contains an official account of the voyage of Count Wiltschek in the summer of 1872 to Spitzbergen and Novaya Zemlya in the yacht *Isbjörn*, the chief object of which was to plant a provision depôt in the Arctic Sea for the Austro-Hungarian expedition under Weyprecht and Payer in the *Tegethoff*. The account contains some valuable observations on the ocean-currents, temperature, weather, wind, &c., of the region, and the geology of Novaya Zemlya; collections of the fauna and flora of that island were made, and photographic views were taken. Nothing is known at present of the Austro-Hungarian expedition in the *Tegethoff*, though it is probable that she may be wintering somewhere on the coast of Siberia.

THE Government of Peru have for some years been expending vast sums of money in exploring the little known portions of Peru which lie to the west of the Andes, and Señor Raimondi, a scientific man of the highest character, has, in the service of the Government, been also exploring the remote valleys between the Cordilleras, and at the head waters of many of the rivers which flow down the northern slopes to the eastern plains, a work in which he has been engaged for twenty years. The announcement is now made that the labours of Señor Raimondi are to be utilised in the publication, by the Government, of a magnificent illustrated work, which is to embrace a narrative of his explorations, and the result of all his researches upon the geography, natural history and climate of Peru.

IN a "Note Additionelle," by Mr. Albert Lancaster, of the Belgian Academy, to Mr. W. T. Brigham's memoir on "Volcanic Manifestations in New England, 1638—1870," published by the Boston Society of Natural History, the author records a number of earthquakes omitted in Mr. Brigham's memoir. Taking all the recorded earthquakes in New England during the last three centuries, the author finds that ·2 occurred yearly during the seventeenth century, 1·2 during the eighteenth, and 2·0 during the nineteenth, though on account of the imperfect data of the seventeenth and eighteenth centuries, he thinks that 2·0 per annum may be taken as the average annual number of earthquake phenomena in New England. If the number of earthquakes during the three centuries be examined in reference to the months in which they occurred, it will be found that there are two distinct maxima and minima, both showing an equality almost to a unit; the former fall in February and November, the latter in April and September, and they are to each other as 3·6 : 1. Dividing the number of earthquakes according to the seasons in which they occurred, it is found that eighty-seven occurred in winter, forty-three in spring, forty-three in summer, and ninety-one in autumn. Enough is not yet known of the geological constitution of New England to enable us to explain these remarkable results, though it is hoped that the researches at present carried on by the U.S. geological officials may ere long enable us to do so.

THE existence of gigantic Cephalopoda in American waters has long been suspected, and at last a large specimen of a "squid," or sepia, has been captured and preserved. The measurements, as given by the Rev. M. Harvey, of St. John's, Newfoundland, are, length of body, 7 ft.; circumference, 5 ft.;

length of two tentacular arms, 24 ft. each; eight pedal appendages, 6 ft. in length, and 9 in. in circumference nearest the head; the sucking-discs are denticulated, and in some instances measure 1¼ in. in diameter. This individual has been preserved, and its measurements are therefore authentic; but still larger specimens are believed to exist, and an account is given of an encounter between some fishermen and a huge creature which, on being struck by them, attacked their boat by twining its arms round the vessel. Two of the arms were cut off by a fisherman, when the squid moved off, ejecting a large quantity of inky fluid to cover its retreat. A portion of one of these arms, measuring 19 ft., has been preserved, but it is said that 6 ft. of it were destroyed, while the fishers estimate that they left 10 ft. more on the body of the squid. This would bring its length to 35 ft. It is to be hoped that more care will in future be taken to prevent the mutilation of specimens; and the capture of the first-mentioned one will, no doubt, excite the fishermen and others to greater care and exertions in looking out for still larger examples. The first squid was caught in Logy Bay, Newfoundland. The encounter with the second took place off Portugal Cove, Conception Bay, about 9 miles from St. John's.

AT a recent meeting of the Essex Institute (Salem, Mass.), Mr. Byron Groce of Peabody read a paper on "The Study of Natural History in Schools," in which he advocated its introduction by substituting it for some of the less useful studies now pursued. He also gave an account of the method he had followed in the High School of Peabody, stating that during the summer he took his school into the woods and fields for a half day each week, taught the scholars to collect specimens and preserve them properly; then had the specimens arranged in the school cabinet, and on unpleasant days in the winter they were used for instruction. In this way a lively interest had been created in the school, and a Natural History Club had been formed among the scholars for the purpose of carrying on the study.

A NEW illustrated weekly newspaper is announced for first appearance on March 7. The title is the *Pictorial World*. We trust the projectors will be wise enough—to take the word in its largest sense—to let its readers know something of what is being done in the world of Science.

WE have received a map (published by the U.S. Geological Survey) of the sources of the Snake River, with its tributaries, together with portions of the head waters of the Madison and Yellowstone, from surveys and observations of the Snake River Expedition, by G. R. Bechler, Chief Topographer, and James Stevenson, Director. The scale is five miles to an inch, and all the remarkable features of the extensive district, which includes the Yellowstone National Park, and the nature and products of the ground, are clearly indicated.

WE have received the third volume, for 1873, and the commencement of the fourth volume of the "Procès-verbaux des Séances de la Société Malacologique de Belgique," showing the activity with which this department of Natural History is pursued in Belgium.

THE additions to the Zoological Society's Gardens during the past week include a Crested Agouti (*Dasyprocta cristata*), from Mexico, presented by Mr. C. H. M. de Lichtacbel; a Pennant's Parakeet (*Platycercus pennanti*), and a Cockateel (*Calopsitta novæ-hollandiæ*), from Australia, presented by Dr. H. Wheeler; a Common Gull (*Larus canus*), British, presented by Mr. W. K. Stanley; a Malayan Hornbill (*Buceros malayanus*), from Malacca, purchased; and a hybrid Pheasant (between *Thaumelia amherstiæ* and *T. picta*), received in exchange.

SCIENTIFIC SERIALS

Justus Liebig's Annalen der Chemie u. Pharmacie, Band 170, Heft 1 und 2. This number contains the following papers:—On the chlorides and oxy-chlorides of sulphur, by A. Michaelis. The author describes the compound SCl_4 and other chlorides, also an oxy-chloride of the formula $S_2O_5Cl_2$. He gives tables and curves showing the dissociation of SCl_4 which is very rapid between − 20° when 100 per cent. of that body exists and + 6°·2 when only 2·43 per cent. exists as SCl_4, the rest consisting of SCl_2 and chlorine. SCl_2 dissociates much less rapidly, 5·44 per cent. existing at a temperature of + 120°. Researches on the nature and constitution of gallic acid, by H. Schiff. A correction of the formula of carbazolin, by C. Gräbe.—On capronic acid contained in the crude butyric acid of fermentation, by A. Lieben—On the salts of capronic acid derived from fermentation, by F. Kottal.—On a condensation product of oxybenzoic acid, by L. Barth and C. Senhofer. The author's obtained a body of the formula $C_{14}H_8O_4$; two of the hydrogens of this formula are replaceable by metals. The Ba Ca, K and Na salts thus formed are described. On treating the original body with zinc, anthracene was obtained. They propose to call this body Anthraflavon; it is useles as a dye-stuff.—On phenol-trisulphuric acid, by C. Senhofer. The acid is prepared by acting on sulphuric acid with phosphoric anhydride in the presence of phenol; it is a tribasic acid of the formula $C_6H_6S_3O_{10}$ crystallising with 3½ molecules of water. Several of its salts are described.—On orthoxylol prepared from liquid brom-toluol, by P. Jannasch and H. Hübner.—On the action of ozone on carburetted hydrogen, by A. Houzeau and A Renard. This is a translation from a paper in the *Comptes Rendus*, vol. lxxvi., 572.—On dichlorglycide, by A. Claus. This body is prepared by the action of potassic hydrate on trichlorhydrin. On the action of potassic cyanide on dichlorglycide, by the same author.—On œnanthylic acid and normal heptyl alcohol, by Harry Grimshaw and C. Schorlemmer.—On trimethyl acetic acid, by A. Butlerow.—On the dichlor propionic ether from glyceric acid, by Messrs. Werigo and Werner.—Contributions to our knowledge of citric acid; and On baric citraconate, by H. Kämmerer.—On dissociation, by A. Horstmann.—The number concludes with a short reply to Butlerow's paper on trimethyl carbinol, by E. Linnemann.

Bulletin de la Société Imperiale des Naturalistes de Moscou. No. 2. 1873.—This number commences with a paper by Dr. Koch on malformations in the embryos of species of salmon and Coregonus; the various monstrosities being treated under the headings of (1) Dicephaly; (2) Diplomyelia (duplicity of spinal cord, total or partial; (3) Divergences of body from its long axis; (4) Defects in organs of locomotion; (5) Anomalies in the vegetative sphere; (6) Defects in organs of sense. As to the disputed point how double monsters arise, Dr. Koch finds confirmation of I. Müller's view, according to which they are produced through union of two organised embryos arising from an imperfect fission. He also asserts that double monsters, where both bodies are formed alike, never live after leaving the egg, and when the yolk has been absorbed; other monsters may, if the form permits of food being procured. From experiments made on production of monsters, it seemed well established, that unfavourable conditions, such as shaking, were peculiarly apt to cause them; even double formations, but only of a certain kind, viz. *Diplomyelia partialis*, not *D. totalis*. The influence of temperature was also seen in the fact, that, with embryos in these unfavourable conditions, a difference of three degrees R. (above the normal cold temperature), made a difference of twelve days in the time of development, which was to this extent retarded. The paper is accompanied with numerous illustrations.—M. Wolkenstein continues his account of anthropological researches on the ancient cemeteries of Waldaï, named "Jalnikis;" giving here detailed measurements of the skeletons found in these peculiar tombs.—M. Becker describes a journey he made in 1872 to several places in the neighbourhood of the Caspian and in South Daghestan; apppending a list of plants and animals found there.—M. Truntschold furnishes some measurements of *Elasmotherium sibericum*; M. Motschoulsky a list of new species of Coleoptera; and there are one or two notes, in Russ, on botanical subjects.

Astronomische Nachrichten, No. 1973. In this number Dr. Stein gives an account of an apparatus for astronomical photography, with which the negatives are taken without the use of a dark room or tent, and if useful in practice, it justly deserves credit. It consists practically of a sort of flat box of glass, one